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Published in:
Journal of Community & Applied Social Psychology

DOI:
10.1002/casp.910

Journal of Community & Applied Social Psychology
J. Community Appl. Soc. Psychol., **18**: 39–53 (2008)
Published online 25 November 2007 in Wiley InterScience
(www.interscience.wiley.com) **DOI**: 10.1002/casp.910

Money Does Not Bring Well-Being, but It Does Help! The Relationship between Financial Resources and Life Satisfaction of the Chronically Ill Mediated by Social Deprivation and Loneliness

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ABSTRACT

Chronically ill people have lower incomes and higher illness-related costs than the general population. Therefore, their financial situation can be considered vulnerable, like their health. The aims of this study were (1) to assess the strength of the relationship between financial resources and life satisfaction of patients with chronic physical illness and (2) to investigate the mediating roles of social deprivation and loneliness in this relationship. Data were used of 1265 patients diagnosed with one or more somatic chronic disease(s), aged 25 years and older, who were recruited from 56 general practices in The Netherlands. GPs provided data on diagnoses and illness duration; chronically ill patients provided data on their functional status, financial situation, social deprivation, loneliness and life satisfaction. Data were analysed by means of correlation and linear regression analyses as well as LISREL path analysis. Available income correlates 0.13 with life satisfaction, which is similar to correlations found in general Western populations. The effect of available income on life satisfaction is mainly an indirect effect that can be explained by the mediating roles of social deprivation and loneliness. Policy should pay specific attention to income support of the chronically ill and disabled in order to improve their opportunities for social participation and increase the quality of their life. Copyright © 2007 John Wiley & Sons, Ltd.

Key words: chronic physical illness; income; life satisfaction; social deprivation; loneliness

INTRODUCTION

Chronic illness may have a substantial impact on well-being (e.g. Moos & Schaeffer, 1984; Rijken, Komproe, Ros, Winnubst, & van Heesch, 1995; Rijken, van Kerkhof, Dekker & Schellevis, 2005; Verhaak, Heijmans, Peters, & Rijken, 2005; Zautra, 1996). Not only do

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 Accepted 11 October 2006

chronically ill patients suffer from a loss of health, but often also their financial situation is affected. The average income of patients with chronic physical illness is considerably lower than that of healthy persons (Heijmans, Spreeuwenberg, & Rijken, 2005; van Agt, Stronks, & Mackenbach, 2000). The main reason for this are the reduced possibilities of these patients to work, which leads to a reduction of paid working hours or early retirement and dependency on (lower) sickness benefits. Besides a reduced income, chronic physical illness brings about several additional costs, for instance direct costs of health care utilization, technical aids and domestic care, and also indirect costs or so-called 'hidden costs' (de Judicibus & McCabe, 2005; Heijmans et al.). With regard to the direct costs, health insurance premiums may be higher because of increased risk, specific services may be excluded, and an accumulation of costs may result from co-payments. Indirect costs are extra costs, for instance extra energy costs because of an electric wheelchair or extra food expenses because of a specific diet, higher telephone and heating costs because of being more at home or gifts for people providing informal care.

In the general population, small but significant correlations have been found between income and measures of subjective well-being (Diener & Biswas-Diener, 2002). Results from a meta-analysis across a large number of individuals and societies reveal that income correlates on an average 0.13 with life satisfaction, 0.13 with positive effect and −0.10 with negative effect (Diener & Oishi, 2000). However, stronger correlations have been found in poor countries and less wealthy groups of the population. Besides the wealth of the society, individual characteristics have been found to moderate the effects of income on subjective well-being such as gender, age and education (Diener & Biswas-Diener). On all these aspects, patients with chronic physical illness differ from the general population: the population of the chronically ill contains relatively more female and older persons, consequently also a larger proportion of lower educated persons and more people with lower incomes and higher health costs. This underlines the relevance of studying the relationship between financial resources and subjective well-being among chronically ill or disabled populations.

Although it seems obvious that the financial situation of people has a significant impact on their subjective well-being, little is known of how such an objective condition is related to subjective well-being. Van Bruggen (2001) states that the main issue in current quality of life research is the relation between objective conditions and subjective well-being, satisfaction or happiness, because 'insight in this relation forms the foundation for much governmental policy' (p. 19). Today in The Netherlands much policy attention is paid to social participation of the chronically ill and disabled. It has been acknowledged that participation of the chronically ill and disabled in all domains, such as work, housing, transport and leisure activities, is a fundamental right (laid down in the Equal Treatment on the Grounds of Disability or Chronic Illness Act, adopted in December 2003), which requires additional efforts. Somatic chronic diseases bring about physical disability, which may reduce participation. However, also financial constraints may lead to social deprivation and a reduction of social participation. Trying to improve participation of the chronically ill, it is therefore very important to gain more insight into the facilitating or obstructing role that the financial situation plays in addition to the (direct) impact of health status on participation options and subjective well-being.

In order to help us understand the relationships between physical disability and income on the one hand and social participation and subjective well-being on the other, we start from a resources approach (e.g. Diener & Fujita, 1995; Hobfoll, 1989, 1998). According to Hobfoll (1998) resources include 'the objects, conditions, personal characteristics, and

DOI: 10.1002/casp

energies that are either themselves valued for survival, directly of indirectly, or that serve as a means of achieving these ends' (p. 54). Diener and Fujita define resources as 'material, social, or personal characteristics that a person possesses that he or she can use to make progress toward his or her personal goals' (p. 926). In Hobfoll's approach, the emphasis is on the protective function of resources for survival and the importance of resource loss in relation to stress (Conservation of Resources or COR theory). Diener and Fujita highlight the function of resources in order to fulfil needs and to attain goals. In both approaches income and health status have been considered as important resources that are related to subjective well-being because of either their protective function or their ability to fulfil needs or attain goals. Nevertheless, in general only small correlations have been found between resources and measures of subjective well-being. One of the explanations is that people can 'produce' well-being in several ways, by striving for different instrumental goals that require different resources (Social Production Function theory; Ormel, Lindenberg, Steverink & Verbrugge, 1999). Thus, a loss of one resource does not necessarily lead to a decrease in well-being, since one can focus on other instrumental goals that can be reached by using alternative resources. Chronic illness, however, does not only mean a loss of health, but may affect many domains of life. Therefore, one can expect the subjective well-being of chronically ill individuals to be reduced because of the loss of health in combination with losses in other domains such as in financial means and in social resources resulting from both physical disability and financial problems.

In this paper we try to answer the following research question:

(1) To what extent are financial resources related to the life satisfaction of patients with chronic physical illness, given their specific socio-demographic and health characteristics?

According to the above-mentioned theories, the impact of resource loss on well-being is larger when people have fewer resources at their disposal. Hobfoll (1998) states that the process of resource loss is a downward spiral: 'at each spin of the cycle, fewer resources are available and greater impact is felt' (p. 81). Therefore we hypothesize that the impact of financial resources on life satisfaction will be more substantial in populations of the chronically ill than it is in the general population, because of the more vulnerable financial situation of the chronically ill in combination with their reduced possibilities to compensate by other resources.

In addition, we formulate a second research question:

(2) How are the financial resources of patients with chronic physical illness related to their life satisfaction; do social deprivation and loneliness mediate this relationship?

Based on Hobfoll's COR-theory we formulate a second hypothesis regarding the nature of the relationship between the financial situation of the chronically ill and their life satisfaction. This hypothesis derives from the type of resource that is at stake here. Financial resources are considered by Hobfoll and others as so-called energy resources. Energy resources are generalized resources, which means that they are valued because they can be exchanged for other resources, for instance food or a house. Thus, they are not valued in themselves, but they aid to acquire other resources. In general, chronically ill people in The Netherlands do not suffer from material deprivation (van Agt et al., 2000). Material deprivation refers to a situation in which people lack money to meet very basic needs, such as food and shelter. Instead, a considerable amount of social deprivation has been found in the Dutch chronically ill population (van Agt et al., 2000). Social deprivation

DOI: 10.1002/casp

can be defined as a situation in which people are constrained in their social functioning because of a lack of financial means. Socially deprived persons are not able to engage in social activities that are considered to be normal in our Western society, for instance inviting relatives or friends for dinner, membership of a sporting or hobby club or going on a holiday now and then. Given the nature of financial resources as energy resources, our second hypothesis is that the relationship between the financial situation of the chronically ill and their life satisfaction is for the largest part an indirect relationship, mediated at least partly by social deprivation and feelings of loneliness resulting from a lack of social resources. Furthermore, the physical status of the chronically ill is a conditional resource to engage in social relationships and activities. However, we expect physical functioning not only to have an indirect effect on life satisfaction, because of its conditional character for social functioning, but also to have a direct impact on life satisfaction since it is conditional for many other resources important for life satisfaction, such as employment, mobility, etc. In addition, a good physical status seems to have an intrinsic value as well.

METHOD

Sample

Subjects of this study were selected from a nationwide representative database of the 'Panel of Patients with Chronic Diseases' (PPCD) (Rijken & Bensing, 2000). PPCD had been set up to provide information relevant for Dutch policy with respect to the consequences of chronic illness. PPCD supplies core data on the health status, the use of health services and social participation of patients with chronic physical illness as well as on the financial consequences of their health situation.

Panel members were selected in December 1997–March 1998 from the medical records of 56 general practices in The Netherlands (a random sample of 368 GPs of the national Register of General Practitioners was approached in order to obtain 50 participating practices). In each practice, GPs screened a random sample of 36% of the patient files with the help of a trained research assistant, in order to guarantee uniform application of the selection criteria. Inclusion criteria were: a diagnosis of a somatic disease defined as chronic[1] by the Netherlands Classification and Terminology Committee for Health (NRV, 1995) and a diagnosis of a somatic disease not chronic by definition, but with symptoms known by the GP for at least 1 year. Exclusion criteria were: aged younger than 15 years, institutionalized, not yet informed about the diagnosis, terminally ill, unable to read or write (even with help) and having insufficient mastery of the Dutch language.

In this paper, we used data of the first survey among the patients (April 1998; net response rate 83.1), in addition to the medical data recorded by the GPs at inclusion. For the purpose of this study, we excluded all respondents younger than 25 years ($n = 117$), because the majority of these youngsters could not be considered to be financially independent (of their parents). Furthermore, we excluded all respondents who had missing data on one or more of the key variables of this study ($n = 687$), resulting in a sample of 1265 medically diagnosed chronically ill aged 25 years and older.

[1]According to this committee, chronic diseases can be distinguished from acute diseases by their course (irreversible, no cure), their duration (life-long, life expectancy > 6 months) and their severity or burden (in terms of disability, health care utilization and self-management).

DOI: 10.1002/casp

The majority of the subjects who were excluded because of missing data did not provide complete information about their income. Therefore, we were not able to compare the incomes of those subjects included with those excluded from the sample. However, the excluded subjects were more often women (61% of the excluded subjects) and they were older (mean age: 61.23 years, $SD = 14.66$) than the subjects included in the sample (see Table 1). Consequently the excluded subjects reported on an average a lower educational level and more physical disability. There were no significant differences between the two

Table 1. Socio-demographic and illness-related characteristics of the sample

	N	%	Mean	*SD*
Gender (male)	1265	45.2		
Age (years)	1265		54.80	14.75
25–44		27.4		
45–64		43.4		
65 and older		29.2		
Educational level	1265			
Low		38.6		
Middle		44.9		
High		16.5		
Living situation	1265			
Alone		21.4		
Cohabited/married		78.6		
Work status	1265			
Employed (12 hours per week or more)		35.2		
Unemployed/occupationally disabled		11.0		
Retired		19.7		
Housewife/student/volunteer		34.1		
Index disease*	1265			
Cardiovascular disease		10.2		
Asthma/COPD		17.8		
Musculoskeletal disorder		16.2		
Cancer		4.9		
Diabetes mellitus		11.3		
Neurological disease		8.4		
Gastrointestinal disease		2.5		
Other chronic disease		28.8		
Illness duration (time post-diagnosis, years)	1265		9.80	9.13
Less than 2		12.8		
2–5		23.8		
5–10		25.9		
10–20		24.7		
20 or more		12.8		
Number of chronic diseases	1265			
One		75.3		
Two		20.2		
Three or more		4.6		
Number of physical disabilities	1265			
None		70.4		
One		15.5		
Two		7.5		
Three or more		6.6		

*Index disease is the oldest diagnosis, in the case of more than one chronic disease.

DOI: 10.1002/casp

groups with regard to social deprivation, loneliness and life satisfaction ($p > 0.05$; see the next section for a description of these concepts).

Data

GPs provided data on the medical diagnosis of the patient and illness duration (time since diagnosis). All other data used in this study were derived from the first patient survey in April 1998. These data were:

- Socio-demographic characteristics: gender, age, educational level, living situation and work status. Educational level was divided into three categories: low (vocational training), middle (high school) and high (college or university). Living situation was considered as a dichotomous variable (0 = living alone and 1 = cohabited/married). Work status was divided into four categories: (1) employed ($\geq$12 hours per week), (2) unemployed/occupationally disabled, (3) retired and (4) other (housewife/student/volunteer).
- Physical disability: assessed by the indicator of long-term physical disabilities developed by the Organisation of Economic Cooperation and Development, OECD (McWinnie, 1979). This OECD-physical disability indicator consists of eight items referring to a variety of motor and sensory limitations. The total score indicates the number of experienced disabilities.
- Net equivalent income: defined as the sum of the monthly net incomes (regardless of source) of all household members corrected for household composition. In the case of a private health insurance, the health insurance premium paid by the household was subtracted from the net income in order to make the net income of the privately insured comparable with that of publicly insured people for whom the (main part of the) health insurance premium has already been paid of their gross income. Furthermore, in order to be able to compare the net incomes of subjects with different household compositions, the total net income of the household was converted into an equivalent net income for single person households. For this purpose, the total net income of the household was divided by an equivalent factor (based on the number of adults and children in the household), which is also used by Statistics Netherlands (1996) (Schiepers, 1988).
- Available income: net equivalent income (see above) minus expenses due to illness per month. Expenses due to illness were assessed by a list containing various categories of expenses. These included all expenses in the previous year which were due to illness of the respondent and which were not compensated for by health insurance or otherwise (see also van Agt et al., 2000).
- Social deprivation: assessed by a deprivation measure described by van Agt et al. (2000) consisting of seven items. The items refer to buying new clothes regularly, possessing a car, having friends or relatives for dinner at least once a month, going out once in 2 weeks, going on a holiday for at least 1 week once a year, membership of a club (e.g. sporting club or music club) and equipment for free leisure time activities (e.g. sporting equipment or bicycle for the children). If a person did not perform the activity or possess the item because of financial reasons, the person was given a score of 1. In this way total scores were calculated ranging from 0 to 7. People were defined by van Agt and colleagues as socially deprived if they could not engage in at least three items (out of these seven) important to social functioning because of financial problems.

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- Loneliness: assessed by six items of the revised UCLA Loneliness Scale (Russell, 1996; Russell, Peplau, & Cutrona, 1980). These items are: There are people I can talk to, I feel isolated from others, There are people I can turn to, There are people who really understand me, I feel part of a group of friends and My social relationships are superficial. The items are scored in accordance to the scale used by Statistics Netherlands (1996): 1, yes; 2, sometimes and 3, no. After reversing the second and sixth item, a total score was computed (range 6–18) so that higher scores indicate more loneliness. The internal consistency of this six-item version was satisfactory (Cronbach's alpha 0.73).
- Life satisfaction: assessed by one item referring to overall satisfaction with life derived from the Netherlands Health Interview Survey (Statistics Netherlands, 1996). This item was formulated as follows: To what degree are you satisfied with the life you are leading at this moment? A five-category response format was used, ranging from extremely satisfied to not so satisfied.

Statistical analyses

In order to describe the study population, we computed frequencies, means and standard deviations of the socio-demographic and illness-related characteristics of the sample. Descriptive statistics were also computed to describe the distribution of the net equivalent income and the available income of the study sample, the occurrence of social deprivation[2] and loneliness and overall life satisfaction of the respondents. Net equivalent income is presented in order to be able to make a comparison with the income of the Dutch general population. In our further analyses, however, we will make use of the available income, being the best indicator of the financial situation of the respondents. In addition to the univariate statistics, bivariate analyses assessing Pearson correlations among the main variables of the study were performed.

Next, we performed two series of linear regression analyses by using SPSS 11.5, testing two mediation models according to the method described by Baron and Kenny (1986). In the first analyses, we tested the mediating effect of social deprivation on the relationship between available income and life satisfaction. In the second series, the mediating effect of loneliness on the same relationship was tested. According to Baron and Kenny, three consecutive regression analyses for both hypothesized mediators were performed:

(1) regress the mediator (social deprivation or loneliness) on the independent variable (available income);
(2) regress the dependent variable (life satisfaction) on the independent variable;
(3) regress the dependent variable on both the mediator and the independent variable.

Model characteristics (significance of F-test and R^2) and variable estimates (beta coefficients and significance of t-values) are presented. In addition, Sobel-tests were performed to estimate whether the indirect effects of available income on life satisfaction—through either social deprivation or loneliness—significantly differed from zero (being the null hypothesis).

[2]We computed the percentage of subjects who had a score of 3 or more on the social deprivation measure in order to be able to compare our findings with the results of van Agt et al. (2000); in our other analyses social deprivation was treated as a continuous variable with scores ranging from 0 to 7.

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Finally, in order to provide more insight into the direct and indirect relationships between available income and life satisfaction, we performed path analysis by using LISREL 8.30 (submodel: causal models for directly observed variables; Jöreskog & Sörbom, 1993). Since we did not make any constraints *a priori* to the hypothesized model, the data perfectly fit the model. Variable estimates (beta and gamma coefficients and significance of *t*-values) are presented.

RESULTS

In Table 1 some socio-demographic and illness-related characteristics of the study sample are presented. The table confirms that the majority of the patients with chronic physical illness are women. The average age is about 55 years with nearly 30% of the sample being 65 years or older. Furthermore, our subjects had a relatively low level of education, which is also consistent with existing knowledge of this population. The great majority lived together with a partner. Furthermore, about one third of our subjects were employed (for at least 12 hours per week). Another third reported house keeping, study or work as a volunteer as their main activity. Twenty per cent were retired and 11% lived on unemployment or sickness benefits. The average illness duration was about 10 years, but the sample contained recently diagnosed patients as well as subjects who had been chronically ill for the largest part of their lives. Three fourths of our sample were diagnosed with one somatic chronic disease and a quarter suffered from multi-morbidity. Table 1 also shows that somatic chronic diseases do not always lead to physical disability; the majority of the chronically ill in our sample report no problems in physical functioning (assessed by the OECD-indicator of long-term disability, eight item version).

Table 2 contains descriptive statistics of the main outcome variables. First, the table shows that the average net equivalent income (NEI) of the chronically ill in our sample was €1.062 per month in 1998. Data from Statistics Netherlands (2001) show that the standardized income (similar to NEI) of the Dutch population in 1998 was €1.350 per month. Thus, generally speaking our sample of chronically ill persons had indeed a substantially lower income than the general population.

Furthermore, Table 2 shows that the mean available income is €39 lower than the NEI, indicating that the chronically ill spent on an average about €39 per month on illness-related costs (besides their health insurance premium). Eleven per cent of the chronically ill in our sample can be considered socially deprived according to the definition of van Agt et al. (2000). This percentage is lower than the 17% found by van Agt and colleagues in 1993 in subjects reporting a chronic illness, but much higher than the 4% they found in people not chronically ill.

Table 3 presents the Pearson correlations among the main variables of the study. The table shows that available income correlates 0.13 with life satisfaction, which is similar to the results found in general population samples. Table 3 also shows that the degree of physical disability of the respondents is stronger related to life satisfaction than their available income. Both resources, available income and (absence of) physical disability, correlate with each other at a relatively modest level (-0.18).

In Tables 4 and 5 the results of the two series of linear regression analyses are presented. Table 4 shows the mediating effect of social deprivation on the relationship between available income and life satisfaction. The first step shows that available income has a substantial significant impact on social deprivation ($\beta = -0.33$), whereas the effect of

DOI: 10.1002/casp

Table 2. Descriptive statistics income, social deprivation, loneliness and life satisfaction

	N	%	Mean	*SD*
Net equivalent income (€)	1265		1061.53	354.40
Less than 700		16.8		
700–900		24.2		
900–1100		20.7		
1100–1300		11.3		
1300–1500		15.7		
1500 or more		11.3		
Available income (€)	1265		1022.75	358.12
Less than 700		19.1		
700–900		25.2		
900–1100		19.8		
1100–1300		11.6		
1300–1500		14.4		
1500 or more		9.9		
Social deprivation (score ≥ 3)	1265			
Not deprived		88.6		
Deprived		11.4		
Loneliness (theoretical range 6–18)	1265		8.72	2.55
Satisfaction with life	1265			
Not so satisfied		9.4		
Fairly satisfied		13.5		
Satisfied		39.5		
Very satisfied		29.1		
Extremely satisfied		8.5		

physical disability on social deprivation is smaller ($\beta = -0.08$). The second step shows that the impact of physical disability on life satisfaction is, however, more substantial ($\beta = -0.22$) than the effect of income ($\beta = 0.11$). When social deprivation is included in the analysis (step 3), the regression coefficient of physical disability on life satisfaction remains quite unchanged ($\beta = -0.21$), while the coefficient of available income drops back to a non-significant 0.06.

In Table 5 similar results are presented when taking loneliness as a mediating variable into account.

The results presented in Tables 4 and 5 suggest that the relationship between available income and life satisfaction is mediated by either social deprivation or loneliness, while this is not the case for the relationship between disability and life satisfaction. Sobel-tests show that the indirect effects of available income on life satisfaction (through either social deprivation or loneliness) are significant, respectively, $Z = 4.90$ and $Z = 12.73$ (both p-values < 0.001). The results of the LISREL path analyses underline and specify the mediating roles of social deprivation and loneliness (see Figure 1).

DISCUSSION

In this paper we examined the relationship between the financial situation of patients with chronic physical illness and their satisfaction with life. We assumed that chronic illness does not only affect health but also the financial situation of individuals. This assumption

DOI: 10.1002/casp

Table 3. Pearson correlations

	Gender	Age	Educational level	Living situation	Physical disability	Illness duration	Available income	Social deprivation	Loneliness
Gender	—								
Age	−0.10**	—							
Educational level	−0.11**	−0.12**	—						
Living situation	−0.12**	−0.17**	0.04	—					
Physical disability	0.14**	0.28**	−0.17**	−0.15**	—				
Illness duration	−0.01	0.05	0.02	−0.03	0.10**	—			
Available income	−0.03	0.05	0.38**	−0.03	−0.18**	−0.02	—		
Social deprivation	0.04	−0.04	−0.18**	−0.12**	0.15**	0.05	−0.37**	—	
Loneliness	−0.05	0.06	−0.11**	−0.07	0.11**	−0.05	−0.16**	0.17**	—
Life satisfaction	−0.05	−0.03	0.05	0.16**	−0.24**	−0.00	0.13**	−0.20**	−0.37**

**$p < 0.001$.

DOI: 10.1002/casp

Table 4. Linear regression analyses, testing mediation hypothesis (social deprivation as a mediator)

Model	Dependent variable	Independent variables	β	p	R^2	Sig. F
1	Social deprivation				0.16	0.000
		Gender	−0.01	0.64		
		Age	−0.08	0.007		
		Educational level	−0.04	0.14		
		Living situation	−0.13	0.000		
		Physical disability	0.08	0.003		
		Illness duration	0.03	0.23		
		Available income	−0.33	0.000		
2	Life satisfaction				0.09	0.000
		Gender	0.01	0.85		
		Age	0.05	0.08		
		Educational level	−0.03	0.29		
		Living situation	0.15	0.000		
		Physical disability	−0.22	0.000		
		Illness duration	0.03	0.36		
		Available income	0.11	0.000		
3	Life satisfaction				0.11	0.000
		Gender	0.00	0.90		
		Age	0.04	0.17		
		Educational level	−0.04	0.21		
		Living situation	0.13	0.000		
		Physical disability	−0.21	0.000		
		Illness duration	0.03	0.28		
		Available income	0.06	0.06		
		Social deprivation	−0.14	0.000		

was supported by our data: the subjects of our study had an average net income (€1.062 per month) that was substantially lower than that of the general population (€1.350 per month) in 1998. We should underline here that we made a simple comparison between the mean NEI of our sample and the mean standardized income of the Dutch general population as presented by Statistics Netherlands (2001) without correcting for differences in socio-demographic characteristics between our sample and the Dutch population. Correction for differences in socio-demographic characteristics would have reduced—but not closed—the observed income gap. Another remark we have to make here is that our sample suffered from a non-respondent bias: missing data on the variables necessary to assess NEI (income, health insurance premium and household composition) was the main reason to be excluded from the study sample. Non-response analyses revealed that those who were excluded from the study sample were more often women, older and lower educated persons and people who reported physical disability. Given the relationships between these characteristics and income, it is likely that the excluded patients had lower incomes than the chronically ill patients in our sample. This implicates that the NEI of our subjects may be an overestimation of the real income situation of the population of the somatic chronically ill in The Netherlands. This makes our assumption that patients with chronic physical illness indeed have lower incomes more likely.

The main purpose of this paper was to examine the relationship between the financial situation of these people and their satisfaction with life. Regarding the strength of this

DOI: 10.1002/casp

Table 5. Linear regression analyses, testing mediation hypothesis (loneliness as a mediator)

Model	Dependent variable	Independent variables	β	p	R^2	Sig. F
1	Loneliness				0.05	0.000
		Gender	−0.08	0.009		
		Age	0.02	0.42		
		Educational level	−0.05	0.09		
		Living situation	−0.07	0.02		
		Physical disability	0.08	0.009		
		Illness duration	−0.06	0.02		
		Available income	−0.13	0.000		
2	Life satisfaction				0.09	0.000
		Gender	0.01	0.85		
		Age	0.05	0.08		
		Educational level	−0.03	0.29		
		Living situation	0.15	0.000		
		Physical disability	−0.22	0.000		
		Illness duration	0.03	0.36		
		Available income	0.11	0.000		
3	Life satisfaction				0.20	0.000
		Gender	−0.02	0.45		
		Age	0.06	0.03		
		Educational level	−0.05	0.08		
		Living situation	0.12	0.000		
		Physical disability	−0.20	0.000		
		Illness duration	0.00	0.90		
		Available income	0.06	0.03		
		Loneliness	−0.34	0.000		

relationship, we expected to find a stronger correlation in our population of the chronically ill than in general Western populations. This hypothesis was not confirmed: we found a Pearson correlation between available income and life satisfaction of 0.13, which is similar to the average correlation found in the meta-analysis of Diener and Oishi (2000). Diener and Fujita (1995) argue that low correlations between resources and subjective well-being in general may—partly—be explained by the hypothesis that people adapt to their levels of resources. The idea is that people use a number of relative standards to evaluate their well-being. One important standard is one's long-term level of a resource. Most of the chronically ill in our sample had already been ill for many years (see Table 1). They may have lowered their standards with regard to health and income during the past years. It is plausible that the largest part of their income loss had occurred years ago, like their loss of health. Diener and Fujita suggest that only recent changes in resources will influence well-being. Additional analysis on a small part of our sample with a more recent diagnosis (those with an illness duration of less than 2 years, 12.8% of the sample, $N = 162$) shows a slightly stronger correlation (0.15), which is not yet convincing. Therefore, further research on our first hypothesis should involve larger samples of chronically ill patients who have been diagnosed recently.

Another explanation for the result that income and life satisfaction in our chronically ill sample were not stronger related than in general Western populations may be that our

DOI: 10.1002/casp

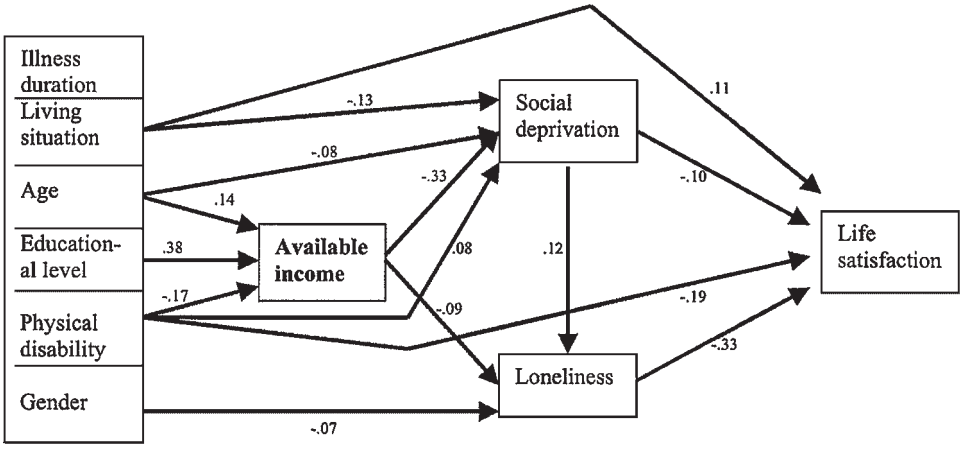

Figure 1. Path model predicting life satisfaction. Arrows point out significant paths ($p < 0.01$).

subjects were still able to compensate for their loss of health and income by changing their instrumental goals and using other resources to maintain a certain level of life satisfaction. When comparing the reported degree of life satisfaction in our sample with the life satisfaction scores of the general Dutch population in 1998, our subjects appear to be distinctly less satisfied with life: 76% of our sample is (extremely/very) satisfied against 88% of the general population (www.cbs.nl StatLine database). This is again a simple comparison without correcting for differences in socio-demographic characteristics. Nevertheless, compensation by the use of other resources may occur to a certain degree in the chronically ill. For this reason we will continue our research by exploring the substitution mechanisms between instrumental goals and resources as described by Social Production Function theory (Ormel et al., 1996) in our panel of patients with chronic physical illness.

Although less strong than expected, there is a significant relationship between the financial situation of the chronically ill and their life satisfaction, even when controlling for gender, age, educational level, living situation, physical functioning and illness duration. We hypothesized (second hypothesis) that the relationship between the financial situation of the chronically ill and their satisfaction with life would be mediated at least partly by social deprivation and loneliness resulting from a lack of contacts. Our findings provide evidence for the mediating role of social deprivation and loneliness in this relationship. These results suggest that financial resources contribute to life satisfaction of the chronically ill, mainly because they promote social participation. We have to be careful here, because of the cross-sectional character of our data and rather poor operationalization of social participation. Social deprivation as measured in the panel can be considered an indicator of social participation, but its disadvantage for the current study is that it already incorporates the role of finances for social participation. Therefore, we added a second indicator to our analyses, loneliness. Loneliness is a much more subjective indicator of social participation. Moreover, the items of our measure of loneliness do not only refer to social isolation but also to emotional isolation. Our results, however, show that not only social deprivation, but also loneliness is negatively associated with the available income of the chronically ill. Furthermore, the positive effect of social deprivation on loneliness

DOI: 10.1002/casp

supports the idea that loneliness is not merely an indicator of emotional well-being, but provides some information on the degree of social participation also. The fact that both indicators (social deprivation and loneliness) mediate the relationship between available income and life satisfaction in a similar way strengthens our reasoning that it is indeed social participation that causes the indirect effect of the financial situation on life satisfaction of the chronically ill.

We conclude that there is a small but significant relationship between the financial situation of patients with chronic physical illness and their satisfaction with life. Physical disability directly affects the life satisfaction of the chronically ill, but it also has a substantial negative effect on their financial situation. The available income does not have a direct effect on life satisfaction, but it facilitates or—in case of a low income—constrains social participation, which in turn is associated with life satisfaction. Since chronically ill and disabled people have lower incomes and higher health costs, policy should pay specific attention to income support of the chronically ill and disabled in order to improve their opportunities for social participation and increase the quality of their lives. The Dutch government has initiated and extended several policy measures to support the incomes of the most vulnerable chronically ill and disabled during the last years. At the same time there have been many cuts in the reimbursement of health care costs that affect the income position of these groups. Therefore more effort is needed to assure that chronically ill and disabled people do indeed have equal chances to participate in a way that suits them.

ACKNOWLEDGEMENTS

This study formed part of the research programme 'Panel of Patients with Chronic Diseases', which is financed by the Netherlands Ministry of Health, Welfare and Sports, the Dutch Health Care Inspectorate and the Ministry of Social Affairs and Employment.

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DOI: 10.1002/casp